1.20 Percent of Local Calls that are Interoffice

1.20.1 Definition

The percent of total Local/EAS calls (that are outgoing to another central office). This input is used to determine the percentage of trunk usage that is attributable to Universal Service.

1.20.2 Default Input Value

Percent of Local Calls that are Interoffice
60%

1.20.3 Source

This is an INDETEC estimate based on consultation with BellSouth, Sprint, and U S WEST subject matter experts.

1.20.4 Rationale

The default input is believed to be a good approximation of a typical value at the national level. This value can, however vary widely by locale. We strongly recommend the use of a locally developed input if possible.

1.21 Average Busy Season Busy Hour CCS per Trunk

1.21.1 Definition

The engineered objective capacity of each trunk.

1.21.2 Default Input Value

ABSBH CCS per Trunk
28.8

1.21.3 Source

This value is based on a suggested default from the Bellcore SCIS model. It represents an 80% utilization of the trunk. 28.8 CCS is 80% of 36 CCS, the maximum usage.

1.21.4 Rationale

This input is consistent with switch-specific engineering inputs used in the development of the Switch Regression Model.

1.22 Portion of SS7 Usage Attributable to Basic Calling

1.22.1 Definition

The switch model includes an investment for the Service Switching Point (SSP), and element of the SS7 network that resides in the end office switch. This input allows the user to assign a portion of the SSP to Universal Service.

1.22.2 Default Input Value

Portion of SS7 Usage Attributable to Basic Calling
25%

1.22.3 Source

This is an INDETEC estimate based on the judgement of BCPM sponsor subject matter experts.

1.22.4 Rationale

The portion of the SSP investment that is attributable to Universal Service is the portion associated with basic call setup. Other types of calls are considered vertical services and features and are not part of the definition of Universal Service.

1.23 Line to Trunk Ratio

1.23.1 Definition

The average number of working lines per local interoffice trunk terminated on the switch. This input is used to determine the number of trunks on each switch. Because the actual number of trunks can vary widely for switches of a given size, we highly recommend that the user provide this input to the Switch-Specific input table on a CLLI basis.

1.23.2 Default Input Value

Line to Trunk Ratio
14

1.23.3 Source

The recommended source is an actual engineered trunk count for each switch. If this is not available, then the default can be used. The default value was calculated from the engineering data used to develop the Switch Regression Model.

1.23.4 Rationale

The Regression Model data contained actual trunk counts for every host and standalone switch.

1.24 Switch Percent Line Fill

1.24.1 Definition

The Percent Fill represents the ratio between the number of working lines on the switch (as publicly reported) and the total number of lines for which the switch is engineered. The difference is due to administrative spares and allowances for growth over an engineering time horizon of several years. The percent fill is used to adjust the number of reported working lines for purposes of calculating total switch investments.

1.24.2 Default Input Value

Switch Percent Line Fill
88%

1.24.3 Source

The best source for this data would be the telephone company switch engineering subject matter experts or the switch vendor.

1.24.4 Rationale

The input value used was derived from the actual engineering inputs used to run the ALSMs in the development of the Switch Regression Model.

1.25 Lucent 5ESS Market Share

1.25.1 Definition

The percentage of switch lines on a forward-looking basis that will be 5ESS. This input is used in the switch investment estimation process.

1.25.2 Default Input Value

Lucent 5ESS Market Share
50%

1.25.3 Source

The best source for this data would be the engineering and purchasing departments of the companies under study.

1.25.4 Rationale

The Lucent 5ESS and the Nortel DMS-100 are the predominant central office switches in the United States today. Interviews with BellSouth, Sprint, and U S WEST subject matter experts indicate that in most cases, future switch placements will be one of these

two types. Since the operating companies and switch vendors consider this data highly confidential, BCPM is supplied with an even distribution between the switch types.

1.26 Nortel DMS-100 Market Share

1.26.1 Definition

The percentage of switch lines on a forward-looking basis that will be Nortel. This input is used in the switch investment estimation process.

1.26.2 Default Input Value

Nortel DMS Market Share
50%

1.26.3 Source

The best source for this data would be the engineering and purchasing departments of the companies under study.

1.26.4 Rationale

The Lucent 5ESS and the Nortel DMS-100 are the predominant central office switches in the United States today. Interviews with BellSouth, Sprint, and U S WEST subject matter experts indicate that in most cases, future switch placements will be one of these two types. Since the operating companies and switch vendors consider this data highly confidential, BCPM is supplied with an even distribution between the switch types.

1.27 Call Completion Fraction

1.27.1 Definition

The percentage of call attempts that result in completed calls.

1.27.2 Default Input Value

Call Completion Fraction
0.7

1.27.3 Source

The best source for this data would be the telephone company switch engineering subject matter or the switch vendor. The default value was adopted from the Hatfield Model 4.0 inputs portfolio.

1.27.4 Rationale

This input is used to adjust the number of engineered busy hour calls (which represent call completions) upward to account for calls attempted but not completed. The resulting

number of busy hour call attempts is used to check whether the switch has exceeded the constraint upon busy hour call attempts.

1.28 Reserve CCS Inv. Per Line: 5ESS Host/Standalone (Optional)

1.28.1 Definition

This input is provided for users who opt to include the Reserve CCS capacity switching investment in the Line Port investment category. A dollar amount per line (undiscounted) is required.

1.28.2 Default Input Value

Reserve CCS Inv. Per Line – 5ESS Host/Standalone
$0.00

1.28.3 Source

This data may be obtained from the Bellcore Switching Cost Information System (SCIS) or other switching model.

1.28.4 Rationale

Many local exchange companies and their regulating entities have agreed that the Reserve CCS investment is a function of line ports, while the BCPM switch regression model includes this investment as a part of usage. SCIS provides both options. The two applications can be considered equally appropriate, depending on the individual company's engineering practices and policy at the state level. BCPM offers this option so as not to exclude any valid economic policies.

1.29 Reserve CCS Inv. Per Line: 5ESS Remote (Optional)

1.29.1 Definition

This input is provided for users who opt to include the Reserve CCS capacity switching investment in the Line Port investment category. A dollar amount per line (undiscounted) is required.

1.29.2 Default Input Value

Reserve CCS Inv. Per Line – 5ESS Remote
$0.00

1.29.3 Source

This data may be obtained from the Bellcore Switching Cost Information System (SCIS) or other switching model.

1.29.4 Rationale

Many local exchange companies and their regulating entities have agreed that the Reserve CCS investment is a function of line ports, while the BCPM switch regression model includes this investment as a part of usage. SCIS provides both options. The two applications can be considered equally appropriate, depending on the individual company's engineering practices and policy at the state level. BCPM offers this option so as not to exclude any valid economic policies.

1.30 Reserve CCS Inv. Per Line: DMS Host/Standalone (Optional)

1.30.1 Definition

This input is provided for users who opt to include the Reserve CCS capacity switching investment in the Line Port investment category. A dollar amount per line (undiscounted) is required.

1.30.2 Default Input Value

Reserve CCS Inv. Per Line – DMS Host/Standalone
$0.00

1.30.3 Source

This data may be obtained from the Bellcore Switching Cost Information System (SCIS) or other switching model.

1.30.4 Rationale

Many local exchange companies and their regulating entities have agreed that the Reserve CCS investment is a function of line ports, while the BCPM switch regression model includes this investment as a part of usage. SCIS provides both options. The two applications can be considered equally appropriate, depending on the individual company's engineering practices and policy at the state level. BCPM offers this option so as not to exclude any valid economic policies.

1.31 Reserve CCS Inv. Per Line ñ DMS Remote (Optional)

1.31.1 Definition

This input is provided for users who opt to include the Reserve CCS capacity switching investment in the Line Port investment category. A dollar amount per line (undiscounted) is required.

1.31.2 Default Input Value

Reserve CCS Inv. Per Line – DMS Remote
$0.00

1.31.3 Source

This data may be obtained from the Bellcore Switching Cost Information System (SCIS) or other switching model.

1.31.4 Rationale

Many local exchange companies and their regulating entities have agreed that the Reserve CCS investment is a function of line ports, while the BCPM switch regression model includes this investment as a part of usage. SCIS provides both options. The two applications can be considered equally appropriate, depending on the individual company's engineering practices and policy at the state level. BCPM offers this option so as not to exclude any valid economic policies.

2 Switch-Specific Data Table

The data in this table is not required to run the Model. It is highly recommended, however, that this table be populated to ensure the most accurate results possible for each wire center. The user may input switch-specific data for certain inputs where that data is available. The data may be provided for a subset of the CLLIs in the study, if desired. BCPM will use the switch-specific data from this table when available, or use defaults from the State Default Table otherwise.

2.1 CLLI

2.1.1 Definition

Common Language Location Identifier. This is the 11-digit CLLI of the switch entity, as defined by the LERG.

2.1.2 Typical Input Value: "ALBSALMADS0"

2.1.3 Source

Extracts from LERG.

2.2 Switch Type

2.2.1 Definition

The vendor model of the central office switch. Presently, BCPM supports 5ESS and DMS-100 host, remotes, and standalone offices.

2.2.2 Typical Input Values: "5EH", "5ER", "DMSH", "DMSR".

The Main Logic module keys on the first character of this field, so the "D" and the "5" are the critical values.

2.2.3 Source

Can be obtained from local engineering records or from ALSM data.

2.3 Busy Hour Calls per Line

2.3.1 Definition

Number of Average Busy Season Busy Hour calls per line. Include all types of calls (local and toll).

2.3.2 Typical Input Value: 2.5

2.3.3 Source

Should be obtained from local engineering records or ALSM input files.

2.3.4 Rationale

This input is used with the Switch Regression Model to compute the total investment per switch. The format of the input is compatible with ALSM inputs.

2.4 Busy Hour CCS per Line

2.4.1 Definition

Total number of Average Busy Season Busy Hour CCS per line. Include all types of usage (local and toll).

2.4.2 Typical Input Value: 3.6

2.4.3 Source

Should be obtained from local engineering records or ALSM input files.

2.4.4 Rationale

This input is used with the Switch Regression Model to compute the total investment per switch. The format of the input is compatible with ALSM inputs.

2.5 Lines per Trunk

2.5.1 Definition

As described in 1.23 above.

2.5.2 Typical Input Value: 14

2.5.3 Source

Obtained from local engineering records or ALSM databases.

2.6 Percent Fill

2.6.1 Definition

The Percent Fill represents the ratio between the number of working lines on the switch (as publicly reported) and the total number of lines that the switch is engineered for. The difference is due to administrative spares and allowances for growth over an engineering time horizon of several years. The percent fill is used to adjust the number of reported working lines for purposes of calculating total switch investments.

2.6.2 Typical Input Value: 88%

2.6.3 Source

We recommend using engineering records for each individual switch. The inputs to the ALSMs include this value for each switch.

3 Global Inputs

3.1 SS7 SSP Investment: 5ESS

3.1.1.1 Definition

This is the non-discounted vendor engineered, furnished and installed (EF&I) investment for the SS7 Service Switching Point (SSP) equipment located in each host or standalone central office.

3.1.1.2 Default Input Value

SS7 SSP Investment – 5ESS
$300,000

3.1.1.3 Source

Local purchasing / procurement department or an Audited LEC Switching Model (ALSM), such as SCIS or SCM.

3.1.1.4 Rationale

The default input value falls within a range of SCIS and SCM results produced by the BCPM sponsor companies.

3.2 SS7 SSP Investment: DMS

3.3.1.1 Definition

This is the non-discounted vendor engineered, furnished and installed (EF&I) investment for the SS7 Service Switching Point (SSP) equipment located in each host or standalone central office.

3.3.1.2 Default Input Value

SS7 SSP Investment – DMS-100
$150,000

3.1.1.3 Source

Local purchasing / procurement department or an Audited LEC Switching Model (ALSM), such as SCIS or SCM.

3.1.1.4 Rationale

The default input value falls within a range of SCIS and SCM results produced by the BCPM sponsor companies.

3.3 Switch Discounts: 5ESS

3.3.1 New Switch Discount

3.3.1.1 Definition
Discount from list price for new 5ESS switches.

3.3.1.2 Default Input Value

New Switch Discount – 5ESS
50%

3.3.1.3 Source
Local purchasing / procurement department. This data is considered confidential and is protected by purchasing contracts.

3.3.2 Growth Discount Rate

3.3.2.1 Definition
Discount from list price for 5ESS growth lines.

3.3.2.2 Default Input Value

Growth Discount Rate – 5ESS
50%

3.3.2.3 Source
Local purchasing / procurement department. This data is considered confidential and is protected by purchasing contracts.

3.3.3 Percent of Lines New

3.3.3.1 Definition
Percent of new lines for 5ESS switches.

3.3.3.2 Default Input Value

Percent of Lines New – 5ESS
50%

3.3.3.3 Source
Local purchasing / procurement department. This data is considered confidential and is protected by purchasing contracts.

3.3.4 MDF & Protector Discount Rate

3.3.4.1 Definition
MDF & Protector discount for 5ESS switches.

3.3.4.2 Default Input Value

MDF & Protector Discount – 5ESS
50%

3.3.4.3 Source
Local purchasing / procurement department. This data is considered confidential and is protected by purchasing contracts.

3.4 Switch Discounts: DMS

3.4.1 New Switch Discount

3.4.1.1 Definition
Discount from list price for new DMS switches.

3.4.1.2 Default Input Value

New Switch Discount – DMS
50%

3.4.1.3 Source
Local purchasing / procurement department. This data is considered confidential and is protected by purchasing contracts.

3.4.2 Growth Discount Rate

3.4.2.1 Definition
Discount from list price for DMS growth lines.

3.4.2.2 Default Input Value

Growth Discount Rate – DMS
50%

3.4.2.3 Source
Local purchasing / procurement department. This data is considered confidential and is protected by purchasing contracts.

3.4.3 Percent of Lines New

3.4.3.1 Definition

Percent of new lines for DMS switches.

3.4.3.2 Default Input Value

Percent of Lines New – DMS
50%

3.4.3.3 Source

Local purchasing / procurement department. This data is considered confidential and is protected by purchasing contracts.

3.4.4 MDF & Protector Discount Rate

3.4.4.1 Definition

MDF & Protector discount for DMS switches.

3.4.4.2 Default Input Value

MDF & Protector Discount – DMS
50%

3.4.4.3 Source

Local purchasing / procurement department. This data is considered confidential and is protected by purchasing contracts.

3.5 Portion of Line Protector and MDF Attributable to USF

3.5.1 Definition

This input is used to apportion the non-traffic sensitive line protector frame and MDF investments between USF and other services.

3.5.2 Default Input Value

Portion of Line Protector and MDF Attributable to USF
100%

3.5.3 Source

Assumption.

3.5.4 Rationale

The FCC concluded in its Further Notice of Proposed Rulemaking that all of the port costs are costs of Universal Service.

3.6 Portion of Line Port Attributable to USF

3.6.1 Definition

This input is used to apportion the non-traffic sensitive line port investments between USF and other services.

3.6.2 Default Input Value

Portion of Line Port Attributable to USF
100%

3.6.3 Source

Assumption

3.6.4 Rationale

The FCC concluded in its Further Notice of Proposed Rulemaking that all of the port costs are costs of Universal Service.

3.7 "Heavy Business" Feature Loading Multiplier

3.7.1 Definition

The additional processor load caused by feature usage at a business line penetration ratio of 100%.

3.7.2 Default Input Value

"Heavy Business" Feature Loading Multiplier
2.00

3.7.3 Source

This input was adopted from the Hatfield Model 4.0 Inputs Portfolio. Use of this figure facilitates comparison of results from different models.

3.7.4 Rationale

Business lines are assumed to create heavier call processing loads upon the switch because of feature usage. This input is used to adjust the busy hour call attempts upward to account for feature usage. It is also used in determining the percent of processor utilization due to features, for purposes of allocating the correct percentage of processor usage to universal service.

3.8 Minimum Feature Loading Multiplier

3.8.1 Definition

The floor or lowest value allowed for the feature loading multiplier. This is the multiplier level at the percent business penetration specified in input 3.9.

3.8.2 Default Input Value

Minimum Feature Loading Multiplier
1.20

3.8.3 Source

This input was adopted from the Hatfield Model 4.0 Inputs Portfolio. Use of this figure facilitates comparison of results from different models.

3.8.4 Rationale

Every switch, no matter how few business lines, is assumed to have a minimum feature load due to residential and business subscribers.

3.9 Business Penetration Ratio

3.9.1 Definition

The penetration ratio at which the minimum feature loading multiplier is reached.

3.9.2 Default Input Value

Business Penetration Ratio
0.3

3.9.3 Source

This input was adopted from the Hatfield Model 4.0 Inputs Portfolio. Use of this figure will facilitate the comparison of model outputs. Use of this figure facilitates comparison of results from different models.

3.9.4 Rationale

3.10 Maximum Lines per Switch

3.10.1 Definition

This is the capacity constraint representing the number of lines at which the Model splits the wire center into multiple switches.

3.10.2 Default Input Value

Maximum Lines per Switch
80,000

3.10.3 Source

This input was adopted from the Hatfield Model 4.0 Inputs Portfolio. Use of this figure facilitates comparison of results from different models.

3.10.4 Rationale

3.11 Maximum Busy Hour Call Attempts per Switch

3.11.1 Definition

This is the capacity constraint representing the number of busy hour call attempts at which the Model splits the wire center into multiple switches.

3.11.2 Default Input Value

Maximum Busy Hour Calls per Switch
600,000

3.11.3 Source

This input was adopted from the Hatfield Model 4.0 Inputs Portfolio. Use of this figure facilitates comparison of results from different models.

3.11.4 Rationale

3.12 Maximum Busy Hour CCS per Switch

3.12.1 Definition

This is the capacity constraint representing the number of busy hour call CCS at which the Model splits the wire center into multiple switches.

3.12.2 Default Input Value

Maximum Busy Hour CCS per Switch
1,800,000

3.12.3 Source

This input was adopted from the Hatfield Model 4.0 Inputs Portfolio. Use of this figure facilitates comparison of results from different models.

3.12.4 Rationale

3.13 Discount Adjustment Factors

3.13.1 Definition

The Discount adjustment factors adjust the input switch vendor discounts to create effective vendor discounts for each switch type and investment bucket.

3.13.2 Default Values

Switch Type:	Processor	MDF & Protector	Line Port	Line CCS	Trunk CCS	SS7
5EH	0.9322	0.6171	0.9301	0.9561	0.9715	0.9931
5ER	0.7959	0.6171	0.9483	0.9630	0.9935	NA
DMSH	0.9769	0.6171	0.9905	0.9685	0.9806	0.9782
DMSR	0.9254	0.6171	0.9980	0.9791	NA	NA

3.13.3 Source

The adjustment factors are the result of an analysis performed by BellSouth upon the set of SCIS switch Model Offices that were used in the regression analysis. The discounted and undiscounted investments were compared to create an effective discount ratio per bucket.

3.13.4 Rationale

The effective switch discount for each investment bucket varies somewhat because the equipment prices used in the different categories include varying amounts of vendor labor, in addition to hardware. The vendor labor has a different effective discount from that of the hardware. These factors adjust the individual bucket discounts to account for that fact.

4 Regression Coefficient Table

4.1.1 Description

The values in the Regression Coefficient Table are the result of a modeling process that is described below.

4.1.2 Default Values

Switch Type	Total Lines	Trunks	Calls	Line CCS	5EH/5ER	5E*Total Lines	5EH*Trunks	Constant
Example Data Units	5000	400	2.5	3.5	=1 if 5E, = 0 else	=total lines if 5E, =0 else	=trunks if 5EH, =0 else	
Stand Alone								
Total Inv	358.74	314.64	822,200	0	-220,880	-57.44	0	0
Port	157.96	0	0	0	0	-105.64	0	0
Line CCS	132.74	0	0	0	-162,030	45.47	0	0
Processor	18.46	0	419,110	0	-398,550	37.74	0	1,194,100
Trk CCS	0.00	522.64	0	0	0	0.00	-243.34	0
MDF	15.74	0	0	0	0	0.00	0	0
SS7 Share	— residual —							
Host								
Total Inv	341.87	481.45	1,062,100	0	-604,800	-71.64	0	0
Port	164.12	0	0	0	0	-114.89	0	0
Line CCS	129.36	0	0	0	122,110	38.40	0	0
Processor	5.98	0	486,620	0	-851,270	45.83	0	1,404,600
Trk CCS	0.00	562.24	0	0	0	0.00	-255.03	0
MDF	16.57	0	0	0	0	0.00	0	0
SS7 Share	— residual —							
Remote								
Total Inv	395.02	0	138,340	0	296,350	-118.60	0.00	0
Port	217.86	0	0	0	0	-154.85	0.00	0
Line CCS	136.43	0	0	0	134,090	25.60	0.00	0
Processor	25.53	0	124,620	0	154,810	14.97	0.00	0
MDF	22.04	0	0	0	34,490	-10.59	0.00	0

4.1.3 Source

5 External Investment Table

This table allows for the input of total discounted switch investments from a variety of sources. The format was designed to fit the data items specified for the FCC Universal Service Data Request of July 31, 1997. The investment number used should be the installed investment, including vendor installation and engineering and Telco installation and engineering.

6 SCIS Investment Table

This table allows for the mechanized input of non-discounted investments (by investment category) from SCIS runs. These investments can be used directly within the Model in lieu of the investments estimated by the Switch Regression Model.

7 SCM Investment Table

This table allows for the mechanized input of non-discounted investments (by investment category) from SCM runs. These investments can be used directly within the Model in lieu of the investments estimated by the Switch Regression Model.

Version 3.0

User Manual

Table of Contents

Benchmark Cost Proxy Model
Version 3.0

User Manual

About BCPM

The Benchmark Cost Proxy Model or BCPM is a computer model designed to estimate benchmark costs for providing business and residential basic local telephone service nationwide. It is based in Microsoft Excel with a user interface developed in Visual Basic for Applications.

About this Manual

This manual is intended to help users of BCPM operate the model. It covers how to install the program, view and modify inputs, generate reports, create new configurations, review calculations, print reports, etc. A separate *System Manual* provides system flowcharts, model logic, and changes from earlier versions.

For information regarding BCPM's approach to modeling the telephone network, see the document entitled *Model Methodology.*

Conventions

In this manual you will see different references. Different typefaces will be used separate those items from each other.

`File Names will be in Courier.`
Drop down menus will be set in Arial with the first character underlined.
Text to be typed will in italicized.
BUTTONS ARE CAPITALIZED AND BOLD.

Computer/Software Requirements

In order to install and process BCPM, you must ensure that your computer meets the following minimum computer requirements:

Windows '95
Pentium Processor 120 MHz (200 MHz – Recommended)
1 Gigabyte of Hard Drive Space for 52 state files
16 MB RAM (32 MB Recommended)
Microsoft Excel '97 with VB Data Access Objects

Installation

The model is available either on CD-ROM or via download from the Website.

CD-ROM

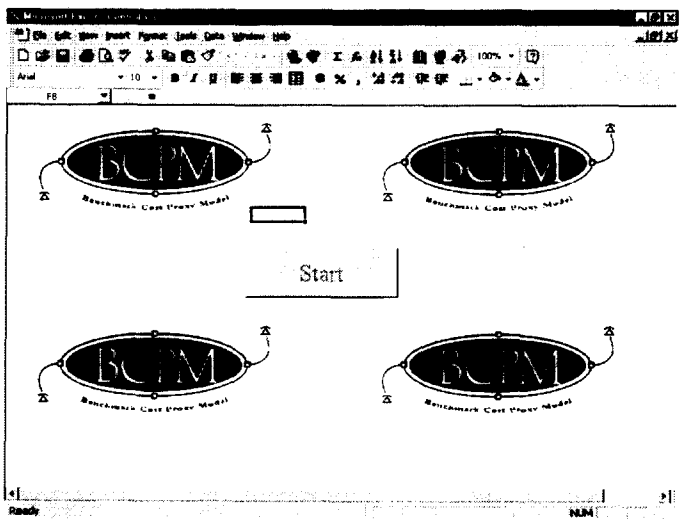
- Click on Run from the Start Menu.
- Type *d:\bcpm3.exe* (where d: is the CD-ROM drive letter).
- The system will display the license agreement. Accept it by clicking on the OK button.
- You will be prompted for an installation folder. The default is `C:\BCPM3`.
- After establishing the installation folder, the system will install the model. A progress bar is displayed.

Web Download

- Access the BCPM web page at www.bcpm2.com to download the model.
- After you select a destination folder, a self-extracting installation file, named `bcpm3install.exe`, will be saved on your hard drive. Double click on it to begin the installation of BCPM.
- The installation program will display the license agreement. Accept it by clicking on the OK button.
- You will be prompted for an installation folder. The default is `C:\BCPM3`.
- After establishing the installation folder, the system will install the model. A progress bar is displayed.
- Once the installation is completed, you can start the model.

Getting Started

To start BCPM, double-click on the `Control.xls` file in the `\bpcm3` folder. Excel '97 will automatically open and display the following screen:



By clicking on the **START** button, you will open the main menu of the model shown below: